

What is Claimed:

- 1 1. A composition comprising a silica xerogel comprising between
2 0.2 and 1.0 mmol/g of a metal component, wherein said metal component comprises
3 at least one alkali metal in an amount between 0.2 mmol/g and 1.0 mmol/g, the
4 xerogel having a pH between 8.0 and 10.5.
- 1 2. The composition of claim 1, wherein the xerogel comprises
2 between 0.3 and 0.8 mmol/g of the metal component.
- 1 3. The composition of claim 1, wherein the xerogel comprises
2 between 0.4 and 0.7 mmol/g of the metal component.
- 1 4. The composition of claim 1, wherein the at least one alkali
2 metal is sodium.
- 1 5. The composition of claim 1, wherein the at least one alkali
2 metal is potassium.
- 1 6. The composition of claim 1, wherein the pH of the xerogel is
2 between 8.5 and 10.0.
- 1 7. The composition of claim 1, wherein the xerogel is an acid-set
2 xerogel.
- 1 8. The composition of claim 1, wherein the xerogel is an alkaline-
2 set xerogel.

1 9. The composition of claim 1, wherein the xerogel is a calcined
2 xerogel.

1 10. The composition of claim 1, wherein the xerogel is a
2 hydrothermally treated xerogel.

1 11. The composition of claim 1, wherein the metal component
2 further comprises at least one alkaline earth metal.

1 12. The composition of claim 11, wherein the xerogel comprises
2 less than 0.1 mmol/g in total of said at least one alkaline earth metal.

1 13. The composition of claim 12, wherein the xerogel comprises
2 between 0.3 and 0.8 mmol/g of the metal component.

1 14. The composition of claim 12, wherein the xerogel comprises
2 between 0.4 and 0.7 mmol/g of the metal component.

1 15. The composition of claim 12, wherein said at least one alkali
2 metal is sodium.

1 16. The composition of claim 12, wherein said at least one alkali
2 metal is potassium.

1 17. The composition of claim 12, having a pH between 8.5 and
2 10.0.

1 18. The composition of claim 12, wherein the xerogel is an acid-set
2 xerogel.

1 19. The composition of claim 12, wherein the xerogel is an alkaline-
2 set xerogel.

1 20. The composition of claim 12, wherein the xerogel is a calcined
2 xerogel.

1 21. The composition of claim 12, wherein the xerogel is a
2 hydrothermally treated xerogel.

1 22. The composition of claim 11, wherein:

2 the xerogel is a hydrothermally treated xerogel comprising less than
3 0.1 mmol/g in total of said at least one alkaline earth metal;

4 the xerogel comprises between 0.4 and 0.7 mmol/g of the metal
5 component;

6 said at least one alkali metal is sodium; and

7 the pH is between 8.5 and 10.0.

1 23. A method for treating beer comprising contacting the beer with
2 a composition comprising a silica xerogel comprising between 0.2 and 1.0 mmol/g of
3 a metal component, wherein said metal component comprises at least one alkali

4 metal in an amount between 0.2 mmol/g and 1.0 mmol/g, the xerogel having a pH
5 between 8.0 and 10.5.

1 24. The method of claim 23, wherein the metal component further
2 comprises at least one alkaline earth metal.

1 25. The method of claim 24, wherein the xerogel comprises less
2 than 0.1 mmol/g in total of said at least one alkaline earth metal.

1 26. The method of claim 25, wherein the xerogel comprises
2 between 0.3 and 0.8 mmol/g of the metal component.

1 27. A method of making a silica xerogel comprising the steps of:

2 a) contacting an aqueous alkali metal silicate with an amount of an
3 aqueous mineral acid sufficient to neutralize between 70% and 95% of the alkali
4 metal in the alkali metal silicate, thereby forming a hydrogel;

5 b) contacting the hydrogel with an aqueous solution of an alkaline
6 earth metal salt to incorporate at least a portion of the alkaline earth metal into the
7 hydrogel;

8 c) aging the hydrogel;

9 d) washing the hydrogel with water; and

10 e) drying the hydrogel to form a xerogel;

11 wherein the silica xerogel comprises between 0.2 and 1.0 mmol/g of a
12 metal component comprising at least 0.2 mmol/g but less than 1.0 mmol/g of the
13 alkali metal and correspondingly no more than 0.8 mmol/g but more than 0 mmol/g
14 of the alkaline earth metal, the xerogel having a pH between 8.0 and 10.5.

1 28. The method of claim 27, wherein a molar ratio of the alkali
2 metal to the alkaline earth metal in the metal component is between about 5:95 and
3 about 95:5.

1 29. The method of claim 27, wherein a molar ratio of the alkali
2 metal to the alkaline earth metal in the metal component is between about 30:70
3 and about 70:30.

1 30. The method of claim 27, further comprising a step of:

2 f) calcining the xerogel.